

WHAT IS CLAIMED IS:

1. An electronic article comprising:
 - a substrate having an electrical conductor thereon, wherein the electrical conductor includes two contacts spaced apart substantially a predetermined distance;
 - an electronic jumper having two contacts spaced apart substantially the predetermined distance and respectively connected to the two contacts of the substrate; and
 - an electronic device on said electronic jumper and having two contacts respectively connected to the two contacts of said electronic jumper, whereby the electronic device is on and connected to said electronic jumper which is on and connected to the electrical conductor of said substrate.
2. The electronic article of claim 1 wherein the electrical conductor on said substrate includes an elongated conductor providing an antenna, whereby said electronic article is a wireless article.
3. The electronic article of claim 1 wherein said electronic jumper includes a substrate of a length substantially the predetermined distance, and wherein said two contacts thereon are substantially at the opposite ends of the length thereof.
4. The electronic article of claim 3 wherein said substrate of said electronic jumper includes a dimensionally stable material.
5. The electronic article of claim 4 wherein said dimensionally stable material includes one of a polyimide, a reinforced fiberglass and a liquid crystal polymer.

6. The electronic article of claim 1 wherein the respective connections of the two contacts of said electronic jumper to the two contacts of the substrate; and/or of the two contacts of said electronic device to the two contacts of said electronic jumper comprise solder and/or electrically conductive adhesive.
7. An electronic article comprising:
 - an insulating substrate having an electrical conductor thereon, wherein the electrical conductor includes first and second contact sites spaced apart substantially a predetermined distance;
 - an insulating electronic circuit substrate having a length substantially the predetermined distance between first and second ends, having first and second contact sites substantially at the first and second ends, respectively, and having first and second terminals respectively connected to the first and second contact sites thereof;
 - an electronic device mounted to said insulating electronic circuit substrate and having first and second contacts respectively connected to the first and second terminals of said insulating electronic circuit substrate; and
 - means for respectively electrically connecting the first and second contact sites of said insulating substrate and the first and second contact sites of said insulating electronic circuit substrate,
 - whereby the electronic device is on and connected to said insulating electronic circuit substrate which is on and connected to the electrical conductor of said insulating substrate.
8. The electronic article of claim 7 wherein the electrical conductor on said insulating substrate includes an elongated conductor providing an antenna, whereby said electronic article is a wireless article.

9. The electronic article of claim 7 wherein said insulating electronic circuit substrate includes a dimensionally stable material.
10. The electronic article of claim 9 wherein said dimensionally stable material includes one of a polyimide, a reinforced fiberglass and a liquid crystal polymer.
11. The electronic article of claim 7 wherein said means for respectively electrically connecting comprises solder and/or electrically conductive adhesive.
12. The electronic article of claim 7 wherein the electrical conductor on said insulating substrate includes an elongated conductor providing an antenna, whereby said electronic article is a wireless article.
13. A set of electronic circuits, each electronic circuit comprising:
 - a rectangular insulating electronic circuit substrate having a predetermined length between first and second opposing ends;
 - first and second elongated rectangular conductors on a surface of said rectangular insulating electronic circuit substrate separated by a gap, wherein said first elongated rectangular conductor has an end at the first end of said rectangular insulating electronic circuit substrate and said second elongated rectangular conductor has an end at the second end of said rectangular insulating electronic circuit substrate;
 - a rectangular area of solder or electrically conductive adhesive disposed on each of the first and second elongated rectangular conductors of said insulating rectangular circuit substrate at the end thereof that is at an end of said rectangular insulating electronic circuit substrate, wherein each rectangular area of solder or electrically conductive adhesive has a cut edge at the end of said first and second elongated rectangular conductor at the end of

said rectangular insulating electronic circuit substrate;

a rectangular terminal of solder or electrically conductive adhesive on each of said first and second elongated rectangular conductors adjacent the gap; and

an electronic device mounted to said rectangular insulating electronic circuit substrate and having first and second contacts connected to the respective rectangular terminals of the first and second elongated rectangular conductors of said rectangular insulating electronic circuit substrate;

whereby the electronic device is on and connected to said elongated rectangular conductors of said rectangular insulating electronic circuit substrate.

14. The set of electronic circuits of claim 13 wherein said rectangular insulating electronic circuit substrate includes a dimensionally stable material.
15. The set of electronic circuits of claim 14 wherein said dimensionally stable material includes one of a polyimide, a reinforced fiberglass and a liquid crystal polymer.
16. The set of electronic circuits of claim 13 in combination with a set of article substrates, each of said article substrates having a conductor pattern including first and second terminals thereon, wherein each of said electronic circuits is attached to one of said article substrates, including means for respectively electrically connecting the rectangular areas of solder or electrically conductive adhesive of the first and second elongated rectangular conductors of each electronic circuit to the first and second terminals of said one article substrate.
17. The set of electronic circuits of claim 16 wherein said set of article substrates includes article substrates of different sizes and/or shapes, and wherein the first and second terminals of each of said article substrates are spaced apart

substantially the predetermined distance.

18. The set of electronic circuits of claim 16 wherein the conductor pattern on said plurality of article substrates includes an elongated conductor providing an antenna, whereby said electronic circuit is a wireless article.
19. A set of electronic articles comprising:
 - a plurality of article substrates each having an electrical conductor thereon, wherein ones of said plurality of article substrates may be of different size than other ones of said plurality of article substrates, wherein the electrical conductor of each of said plurality of article substrates includes first and second contact sites spaced apart substantially a predetermined distance;
 - on each of said plurality of article substrates:
 - an electronic circuit substrate having a length substantially the predetermined distance between first and second ends thereof and having first and second contact sites substantially at the first and second ends thereof, respectively;
 - an electronic device mounted to said electronic circuit substrate and having at least two contacts respectively connected to the first and second contact sites of said electronic circuit substrate; and
 - means for electrically connecting the first and second contact sites of each of said plurality of article substrates and the first and second contact sites of one electronic circuit substrate,whereby for each article substrate of said plurality of article substrates the electronic device is on and connected to said electronic circuit substrate which is on and connected to the electrical conductor of said article substrate.
20. The set of electronic circuits of claim 19 wherein said electronic circuit substrate includes a dimensionally stable material.

21. The set of electronic circuits of claim 20 wherein said dimensionally stable material includes one of a polyimide, a reinforced fiberglass and a liquid crystal polymer.
22. The set of electronic circuits of claim 19 wherein said means for electrically connecting comprises solder and/or electrically conductive adhesive.
23. The set of electronic circuits of claim 19 wherein the electrical conductor on said plurality of article substrates includes an elongated conductor providing an antenna, whereby said electronic circuit is a wireless article.
24. A method for making an electronic article comprising:
 - providing an insulating substrate for the electronic article having an electrical conductor thereon, wherein the electrical conductor includes first and second contact sites spaced apart substantially a predetermined distance;
 - providing an insulating electronic circuit substrate having a length substantially the predetermined distance between first and second ends, having first and second contact sites substantially at the first and second ends thereof, respectively, and having first and second terminals respectively connected to the first and second contact sites thereof;
 - mounting an electronic device to the electronic circuit substrate with first and second contacts of the electronic device connected to the first and second terminals of the electronic circuit substrate; and
 - then mounting the electronic circuit substrate to the insulating substrate with the first and second contact sites of the substrate electrically connecting with the first and second contact sites of the electronic circuit substrate.
25. The method of claim 24 further comprising, prior to said mounting an electronic device, applying solder or electrically conductive adhesive to the first and second terminals of the insulating electronic circuit substrate.

26. The method of claim 25 wherein said mounting an electronic device includes heating the solder or electrically conductive adhesive to a melting temperature and placing the first and second contacts of the electronic device against the solder or electrically conductive adhesive.
27. The method of claim 24 further comprising, prior to said mounting the electronic circuit substrate, applying solder or electrically conductive adhesive to the first and second contact sites of the insulating substrate and/or to the first and second contact sites of the electronic circuit substrate.
28. The method of claim 27 wherein said mounting the electronic circuit substrate includes heating the solder or electrically conductive adhesive to a melting temperature and placing the first and second contact sites of the electronic circuit substrate against the solder or electrically conductive adhesive.
29. The method of claim 28 wherein said providing an insulating electronic circuit substrate includes providing a substrate of a material that is dimensionally stable at the melting temperature.
30. The method of claim 28 wherein said providing an insulating substrate includes providing a substrate of a material that is not dimensionally stable at the melting temperature.
31. The method of claim 24 wherein said providing an insulating substrate comprises forming an elongated electrical conductor defining an antenna connected to the first and second contact sites.

32. A method for making a plurality of electronic articles comprising:
- providing an insulating substrate having a plurality of electrical conductor patterns thereon, wherein each electrical conductor pattern includes first and second contact sites spaced apart substantially a predetermined distance;
 - providing an electronic jumper substrate of a dimensionally stable insulating material having a plurality of sets of first and second contacts and first and second terminals thereon, wherein the first and second contacts of each set thereof are spaced apart substantially the predetermined distance;
 - mounting a plurality of electronic devices to the electronic jumper substrate with first and second contacts of each electronic device connected to one set of first and second terminals of the electronic jumper substrate;
 - separating the electronic jumper substrate into individual jumpers wherein each individual jumper includes one set of first and second terminals and one electronic device connected thereto, wherein the set of first and second contact sites of each individual jumper are adjacent respective edges of the individual jumper;
 - then mounting individual jumpers to the insulating substrate with the first and second contact sites of the individual jumper electrically connecting with the first and second contact sites of one electrical conductor pattern of the electronic jumper substrate; and
 - separating the insulating substrate into individual electronic articles, wherein each individual electronic article includes one conductor pattern and one individual jumper.
33. The method of claim 32 further comprising, prior to said mounting a plurality of electronic devices, applying solder or electrically conductive adhesive to the first and second terminals of the electronic jumper substrate.

34. The method of claim 33 wherein said mounting a plurality of electronic devices includes heating the solder or electrically conductive adhesive to a melting temperature and placing the first and second contacts of the plurality of electronic devices against the solder or electrically conductive adhesive.
35. The method of claim 32 further comprising:
prior to said separating the electronic jumper substrate, applying solder or electrically conductive adhesive to the first and second contact sites of the individual jumpers; and/or
prior to said mounting individual jumpers, applying solder or electrically conductive adhesive to the first and second contact sites of the insulating substrate.
36. The method of claim 35 wherein said mounting individual jumpers includes heating the solder or electrically conductive adhesive to a melting temperature and placing the first and second contact sites of the individual jumpers against the solder or electrically conductive adhesive.
37. The method of claim 36 wherein said providing an insulating substrate includes providing a substrate of a material that is not dimensionally stable at the melting temperature.
38. The method of claim 32 wherein said providing an insulating substrate comprises forming an elongated electrical conductor defining an antenna connected to the first and second contact sites.

39. A method for making a plurality of electronic articles comprising:
- providing an insulating substrate of a material having a plurality of electrical conductor patterns thereon, wherein each electrical conductor pattern includes first and second contact sites spaced apart substantially a predetermined distance;
 - providing an electronic jumper substrate of a dimensionally stable insulating material having a plurality of elongated conductors thereon, wherein the pitch of the elongated conductors is substantially the predetermined distance;
 - applying a pattern of solder paste or electrically conductive adhesive on each of the elongated conductors, wherein the pattern of solder paste or electrically conductive adhesive includes at least areas at opposite distal ends of each elongated conductor and an area central to each elongated conductor;
 - placing a plurality of electronic devices on the electronic jumper substrate with first and second contacts of each electronic device abutting the pattern of solder paste or electrically conductive adhesive at adjacent distal ends of adjacent ones of the plurality of elongated conductors;
 - processing the solder paste or electrically conductive adhesive to electrically connect the first and second contacts of each electronic device to the adjacent elongated conductors of the electronic jumper substrate;
 - separating the electronic jumper substrate into individual jumpers including dividing each elongated conductor and the central area of solder paste or electrically conductive adhesive thereon, wherein each individual jumper includes first and second elongated conductor portions and one electronic device having first and second contacts respectively connected thereto, wherein the divided central solder paste or electrically conductive adhesive area of the first and second elongated conductor portions of each individual jumper are adjacent respective edges of the individual jumper, and wherein each individual jumper has one dimension that is substantially the predetermined distance;
 - then mounting individual jumpers to the insulating substrate with the

divided central solder paste or electrically conductive adhesive areas of the first and second elongated conductor portions of the individual jumper electrically connecting with the first and second contact sites of one electrical conductor pattern of the insulating substrate; and

separating the insulating substrate into individual electronic articles, wherein each individual electronic article includes one conductor pattern and one individual jumper connected thereto.

40. The method of claim 39 wherein said processing includes heating the solder paste or electrically conductive adhesive to a melting temperature, and/or heating the electrically conductive adhesive to a curing temperature.
41. The method of claim 39 wherein said mounting individual jumpers includes heating the solder paste or electrically conductive adhesive to a melting temperature, and/or heating the electrically conductive adhesive to a curing temperature.
42. The method of claim 41 wherein said providing an insulating substrate includes providing a substrate of a material that is not dimensionally stable at the melting temperature.
43. The method of claim 39 wherein said providing an insulating substrate comprises forming an elongated electrical conductor defining an antenna connected to the first and second contact sites.
44. The method of claim 39 wherein said separating the electronic jumper substrate includes either die cutting the electronic jumper substrate or die cutting the electronic jumper substrate by a die contacting the central solder paste or electrically conductive adhesive area.

45. A method for making a plurality of electronic circuits comprising:
- providing an electronic jumper substrate of a dimensionally stable insulating material having a plurality of elongated conductors thereon, wherein the pitch of the elongated conductors is a predetermined distance;
 - applying a pattern of solder paste or electrically conductive adhesive on each of the elongated conductors, wherein the pattern of solder paste or electrically conductive adhesive includes at least areas at opposite distal ends of each elongated conductor and an area central to each elongated conductor;
 - placing a plurality of electronic devices on the electronic jumper substrate with first and second contacts of each electronic device abutting the pattern of solder paste or electrically conductive adhesive at adjacent distal ends of adjacent ones of the plurality of elongated conductors;
 - processing the solder paste or electrically conductive adhesive to electrically connect the first and second contacts of each electronic device to the adjacent elongated conductors of the electronic jumper substrate;
 - separating the electronic jumper substrate into individual jumpers including dividing each elongated conductor at the central area of solder paste or electrically conductive adhesive thereon, wherein each individual jumper includes first and second elongated conductor portions and one electronic device having first and second contacts respectively connected thereto, wherein the divided central solder paste or electrically conductive adhesive area of the first and second electrical conductor portions of each individual jumper are adjacent respective edges of the individual jumper, and wherein each individual jumper has one dimension that is substantially the predetermined distance.
46. The method of claim 45 wherein said processing includes heating the solder paste or electrically conductive adhesive to a melting temperature, and/or heating the electrically conductive adhesive to a curing temperature.

47. The method of claim 45 wherein said separating the electronic jumper substrate includes either die cutting the electronic jumper substrate or die cutting the electronic jumper substrate by a die contacting the central solder paste or electrically conductive adhesive area.
48. The method of claim 45 further comprising:
providing an insulating substrate including an elongated electrical conductor defining an antenna connected to first and second contact sites; and
connecting the divided central solder paste or electrically conductive adhesive areas of the individual jumper to the first and second contact sites of the insulating substrate.
49. An electronic article comprising:
an insulating tag substrate having an elongated electrical conductor providing an antenna thereon, wherein the electrical conductor includes first and second contact sites spaced apart substantially a predetermined distance;
an insulating jumper circuit substrate having a length substantially the predetermined distance between first and second ends and having an electrical conductor therebetween on one surface thereof, and having first and second contact sites substantially at the first and second ends, respectively;
an electronic device mounted to one of said insulating tag substrate and said insulating electronic jumper circuit substrate and having first and second contacts respectively connected at opposing sides of a gap in one of the elongated electrical conductor of said insulating tag substrate or the electrical conductor of said insulating electronic jumper circuit substrate; and
means for respectively electrically connecting the first and second contact sites of said insulating tag substrate and the first and second contact sites of said insulating electronic jumper circuit substrate with the one surface thereof distal the insulating tag substrate;
whereby the electronic device is operatively connected to the antenna of said insulating tag substrate and said electronic article is a wireless article.